

GeoCAPE Airborne Simulator (GCAS)

Completed Technology Project (2012 - 2013)



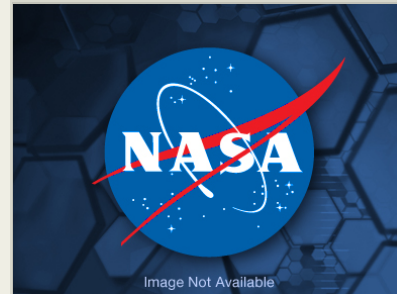
Project Introduction

The GCAS project consists of the fabrication, calibration and 1st deployment of an aircraft instrument with specifications that are aligned with the current science requirements of the Geostationary Coastal and Air Pollution Events (GEO-CAPE) mission as recommended by the National Research Council's decadal survey of Earth Science and Applications from Space[1]. We will advance the technology readiness as well as refine the discipline science measurement requirements for the GEO-CAPE effort. The task builds on achievements from our FY'10 IRAD effort and parallel ongoing efforts in the Atmospheric Chemistry and Dynamics Branch with the Geostationary Spectrograph (GeoSpec) and Airborne Compact Atmospheric Mapper (ACAM) instruments. The effort will consist of system level packaging, calibration, and ground-based and airborne demonstrations of a two-channel UV/VIS/NIR spectrograph.

Tropospheric ozone (O₃) is an important greenhouse gas. Background concentrations of tropospheric O₃ have increased 100-200% over the past century producing a climatic impact comparable to that of CH₄ (exceeded only by CO₂ among other greenhouse gases). Aerosol increases generally have the opposite direct climate impact, diminishing greenhouse warming by reflecting more sunlight back to space. Aerosol also affects cloud processes, an indirect climate effect that is unquantifiable today. Changes in the large-scale atmospheric composition contribute to worsening local air quality in many regions. Declining air quality in the US costs the public billions in health care and lost productivity, produces several thousand premature fatalities annually [1], damages our environment, and decreases our standard of living.

Anticipated Benefits

Potential Cal/Val resource for TEMPO.



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Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland

Project Management

Program Manager:

Peter M Hughes

Project Manager:

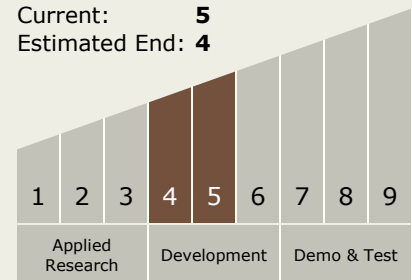
Matthew J McGill

Principal Investigator:

Scott Janz

Technology Maturity (TRL)

Start: 5
 Current: 5
 Estimated End: 4



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - TX11.4 Information Processing
 - TX11.4.1 Science, Engineering, and Mission Data Lifecycle